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CONTENTS.

SUMMARY: —
Preparing for the French Exhibition. — Singular Action of a School Committee. — The Principles that regulate the Position of Windows. — A Proposed Law relating to Bridges in Pennsylvania. — Convict Labor. — French Trades-Unions . 73
ARCHITECTURAL STUDENTS. IX. 74
STUDIES OF INTERIOR DECORATION. II. 75
THE ILLUSTRATIONS: —
The Woburn Town Library. — House at Wellesley. — Studies of Interior Decoration 76
THE RELATIONS AND POINTS OF CONTACT BETWEEN THE ARTS . . 76
BOOK NOTICES 78
COMMUNICATIONS: —
The Drainage of Country Houses. — Trinity Church, Boston. — How More than Five Per Cent may be Paid 79
NOTES AND CLIPPINGS. 80

FOURTEEN months only are to pass before the opening of the Paris Exhibition, and in that time there is an almost inconceivable amount of work to be done not only by the French but by foreign nations. There is little doubt that the French, backed by government subsidies, will have performed their part well and in due season; for they have stored up the lessons of their former exhibitions which taught them the value of thorough planning and the proper subdivision of labor. They have maturely considered their scheme, have begun on it betimes, and are pushing it with busy industry, so that there is but little chance that their share of the work will cause disorder by the unfinished condition of the buildings or their approaches. Other nations have appointed their commissioners, and are already at work preparing to receive and arrange the exhibits of their respective countries. England has appreciated the services that Mr. Cunliffe Owen has rendered to the nation at former exhibitions, and has placed him in the position due to his training and experience. Our Government could not do better than to follow this example, and place upon its commission some of the men who managed so successfully the late Centennial Exhibition. But as yet Congress has taken no step in the matter, and there is no small chance that the American exhibit may be in as disordered condition on the day of opening as it was at Paris in 1867, and at Vienna in 1873.

BUT even if Government has not yet taken any step, there is much that can be done by private individuals and corporate bodies, that will need only the future sanction of the United States Commission; and it is not too soon for such to begin their arrangements. If it is kept in mind that the rooms set apart for the architectural exhibit at Paris will not be as empty and neglected as were those at Philadelphia last summer, the propriety of making some united effort toward securing a more satisfactory and more complete showing of what American architecture has accomplished, and what promise it makes for the future, would be seen at once. It would be feasible to appoint a commission whose members should be chosen from the best men in the Institute and outside of it, which should have it in charge that the designs and drawings that are sent to Paris shall not do us unnecessary discredit when contrasted with the thoroughly studied and delicately rendered drawings of French architects, or the picturesque and brilliant pen-and-ink work of the English architects. It is sincerely to be hoped that some united and timely action may be taken to exclude the many *bizarre* and fantastic designs — so called by courtesy — that are sure to be sent in; and this can only be done by placing upon the commission men of the highest attainments.

THE following extraordinary resolution is reported in the papers from a recent meeting of the Boston School Committee. The windows of the upper story of the schoolhouse in question had their sills five feet from the floor, while those in the lower stories were but three.

"Whereas, any theory relating to the admission of light, which is correct in its application to thirty-two windows placed *three* feet from the floor in eight rooms, cannot be correct in its application to ten windows placed *five* feet from the floor in two rooms, all in the same schoolhouse, . . .

"*Ordered*, That the City Council be respectfully requested to cause the windows of the two schoolrooms described in the preamble of this order, to be lowered to the height of the windows in the other schoolrooms of the same building."

The circumstances of the particular case in question are not important enough to be hunted up, but the resolution is a fair example of the free and easy way in which authorities sometimes set themselves to lay down general laws in matters in which they are not expert. Why, one is tempted to ask, should any "theory relating to the admission of light" be expected to give the same results for all rooms? or why give results so minutely decisive as to allow of no variation? or why are theories relating to the admission of light the only things to be considered in placing windows? or why should such a question be decided by a majority vote among windows? or what has their being all in the same schoolhouse to do with theories of lighting? As a specimen of the hasty reasoning which often does carry away committees to the discomfiture of architects, this is worth notice.

THERE are three practical considerations that influence the placing of windows in any building. These are, — their use in lighting and ventilating the building, constructive convenience, and architectural effect. They are all legitimate and important considerations, in their due order, in which of course the first is the chief. He takes a foolish part who essays to determine a question of windows without regard to them all; but there are limits within which each may reasonably yield to the other. In rooms which are to be used as sitting-rooms or living-rooms, especially where there is any view to be seen, it is a crying fault to set windows so high that people in their chairs cannot look out of them with comfort. But in places set apart for special services, as churches, or where any occupation which requires concentrated attention is to be carried on, the case is quite different. In a room that is to be used only for study and writing, the important requisites are that there shall be plenty of light, that it shall come from the proper quarter, preferably from the left hand, and that it shall not be too low. These conditions secured, we should be inclined to say that between three feet and five, the latter was, on the whole, the better height for the window-sills in a schoolroom. The light that comes in below that level is not serviceable, and there is no reason for tempting either teachers or scholars to turn their attention out of doors. The limit, however, is one within which architectural effect may reasonably be allowed to rule. One would naturally infer that this was the determining consideration in the schoolhouse referred to. But whatever may have been the real justification of the singular resolution we have quoted, the reason given for it in the preamble is as apposite as if it had been recommended that whereas the ten chimneys on the Town Hall, serving twenty-five fireplaces, rose only twelve feet above the roof, while the six chimneys on the Court-House, serving only eighteen fireplaces, rose fifteen feet above its roof, therefore the six chimneys should be razeed to the height of the ten.

THE Brooklyn fire has already given being to a wholesome crop of municipal and legislative action throughout this country and abroad, and now the fruits of the Ashtabula disaster are making themselves known in a similar manner; and as in the first case, they are likely to mature to a good end, as public sympathy is still quick, and any measures which look to diminishing the dangers that beset our daily life will be sure of popular support. A bill has lately been introduced in the House of the Pennsylvania Legislature which will make it the duty of any corporation that has built or shall build in the Commonwealth of Pennsylvania any bridge for the passage of railroad trains, to file in the office of the Secretary of the Commonwealth and in the office of the Recorder of Deeds of the county in which the bridge is, within thirty days after the passage of the first train over such

bridge, a copy of the specifications of the requirements which were to be met by the bridge, together with a copy of the strain-sheets showing the strains to which the different parts are to be subjected, and the sectional areas which are designed to sustain these strains. To these must be added copies of the working-drawings in accordance with which the bridge was built, and the sworn statement of the chief civil engineer, or, if in case there should be no such officer, the president of the road, declaring that the specifications, strain-sheets, and drawings accurately describe and represent the bridge as actually built. A penalty of twenty-five dollars a day is to be levied for each day elapsing after the thirty days of grace before all the requirements are complied with. We trust this bill will pass not only the Pennsylvania Legislature, but also be adopted by other States, but with the addition of a clause that shall make it obligatory to file similar drawings and specifications of any alterations that may in the future be made. But bridges are not the only structures of which such records should be kept. Mills, manufactories, and warehouses in which are employed large numbers of men and women need more of a guaranty than the approval of an ordinary building-inspector at the time of erection. At any rate, there is one way in which legislative authority may be usefully exercised; that is, by compelling owners of buildings that may be leased for mercantile purposes to insert in their leases a clause stating the weight that such buildings are calculated to sustain, and constraining the lessee to place such statement in places where it may be constantly before the eyes and minds of his employees.

NOT long ago a convention of Illinois stone-cutters was called, but never held, to see if means could not be found to restrain the State from employing convict-labor in cutting stone for the new State Capitol, as was lately explained by our Chicago correspondent: the call expressed it, restraining the State from employing "more than fifty convicts on one trade." There was some justice in this desire, because the State by so doing deprived more honest men of the work; but one of the penalties of civilization is the enforced support of the criminal classes by the honest, and it is evidently for the good of the greatest number that criminals should be as far as possible self-supporting, even though it may bear a little unfairly on the trades in which they are employed. If among the convicts employed on the stone-work for the Capitol, there were certain statesmen of the class of which William M. Tweed is a type, there would be a certain poetical justice in it. The grimmest piece of humor that we know of is the use that the English make of convict-labor in the construction of prisons. Very probably the convicts who are to occupy the prisons are not the ones who are employed to build them; for a foreknowledge that they were building their own cells would lead, in spite of all vigilance, to scamping the work with the hope that they were thereby favoring their chances of escape. Two English prisons have lately been built by convict-labor, — one at Borstal near Rochester, where "selected" prisoners in sixteen weeks had so far completed the building that forty cells were fit for use when the building was formally occupied as a prison: since that time cell-buildings have been built and nearly completed, so that the present capacity of the prison is about five hundred. The same system was employed in building the prison at Wormwood Scrubbs, which is to take the place of Milbank Prison. Free labor was employed only in building a boundary fence at Borstal and on certain temporary buildings at Wormwood Scrubbs, and even then the material had all been prepared by convict-labor. For the prisons themselves, the bricks were made and the stone dressed on the spot; the stone was quarried at Portland and Dartmoor; the iron castings made at Portland; and the carpenters', joiners', and blacksmiths' work done at Milbank and Chatham, — all by convict-labor.

THE present is a time of no little anxiety to the building-community in France, as it is now being discussed whether or not trades-unions shall be introduced. The movement was initiated by the Workingmen's Congress recently held at Paris, which resulted in the introduction in the National Assembly by M. Lockroy of a bill to abolish Article 291 of the Penal Code, which renders trades-unions illegal by declaring that no meeting of more than twenty persons can be held without a license obtained from the police. Heretofore the relations of employers to their employees have been fixed by *chambres syndicales*, which are committees of less than twenty men forming a sort of board of arbitration to which the workmen have recourse in case of dissatisfaction. We believe that this method has hitherto given satisfaction; and we regret that the more brutal if more popular manner of obtaining an end is likely to be substituted for it. It does not take much to excite a Frenchman to such a point as to be forgetful of his best interests; and once let a body of them go as far as English strikers have sometimes gone, and a long stride towards a revolution would have been taken. It would be interesting, however, to see what part government would play in strikes, as for instance, a general strike of locomotive engineers.

ARCHITECTURAL STUDENTS. — IX.

RENDERING.

THE architectural student is not to think that when he has learned to represent with fidelity whatever he may have to draw, he has got all the capability he needs: in fact, the temptation to picture-making in one way or another is sure to beset him almost from the first moment he takes his pen or his brush in hand. It might be thought, perhaps, that encouragement of this tendency was altogether undesirable, and that the only thing to do was to lift the voice of warning against it. Nevertheless, in spite of the temptation which it offers to rely on effects that belong to a drawing rather than to the design it represents, and the abuses to which it is liable in competitions, the study of artistic effect in rendering — whether or no it is of any value to the public in whose behalf it is employed, and on whom it often imposes, as must be confessed — is certainly of much value to the architect who practises it. For it not only illustrates his design by a reflected light, as it were, but is itself, if done seriously and honestly, one of the very best means of training in him the sense of unity of effect which is the essence of the designer's skill. We are not writing, be it remembered, for the benefit of those who wish to learn to cajole clients and committees by clever tricks of execution, but for those who wish to cultivate their artistic sense on all sides as thoroughly as possible.

Eclecticism in design brings the danger of losing the feeling of unity in the multitude and discrepancy of the elements which it tries to combine. Now nothing helps this feeling more than the careful study of the *ensemble* of a drawing, — that is, than picture-making in the right sense; and nothing shows the weakness of a certain class of draughtsmen, far too numerous, than their incapacity to see how one part of a drawing or design affects another, or how all parts may unite in general effect. It is not enough even for the right representation of an architectural design, that each detail should be drawn with precision, and that the outline and perspective of the masses should be correct. The effect of the design as represented may depend very much upon the way in which this or that feature tells in it, upon the prominence or subordination of this or that detail, upon the predominance in force of one line over another, or the contrast between the repose of one surface with the animation of its neighbor. Many a design is thrown hopelessly out of adjustment in its rendering by the inefficiency with which some important element in it is set forth, or the harshness with which another is thrust into prominence. This rendering ought to serve not only for the information of the client or the public, but for indication to the architect of the effect to be aimed at or the dangers to be avoided in carrying out his design, and of the technical means by which it can be modified as he wishes it. A failure in this is apart from the other serious faults of bad textures, ill-balanced shadows, injurious accessories, unmeaning lines put in with a false notion of effect, and the hundred shallow tricks of which poor draughtsmen avail themselves to make what they think a good picture.

Examples are worth more to the student than maxims, and we advise him to study a good variety of them. Luckily there is abundance to be had. We advise him not to be content with the habit of work of the office in which he may be, but to learn the ways which accomplished men have

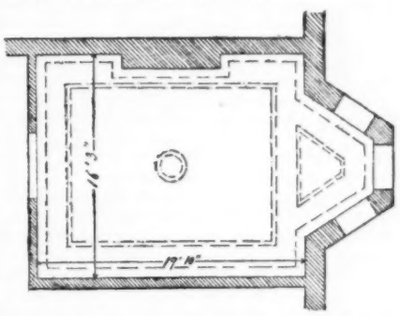
devised, choosing good examples and copying them as faithfully as possible, yet with regard rather to the general effects and character of the work than to such small tricks of execution as may usually be detected in them. It is well, by the way, for the student to remember in this, as in all copying, that the value of the copying depends on understanding the meaning of the thing that is to be copied. Every artist's drawing is in some degree an interpretation; and to know the value of an interpretation, it is indispensable to have some knowledge of the original. Therefore it is decidedly not best for the student to go in search of examples of rendering till he is practised in drawing, pure and simple. If he finds, as he will find in the work of good draughtsmen, that the architectural work is supported by cleverly drawn accessories, and if he wishes to make use of the like in his own work, he had best beware of depending on the drawings he copies for his knowledge of such accessories, but should make it a point to get studies of them directly from nature. Copying unguarded by knowledge will prove futile, for the copyist will not know what is significant and what accidental or unimportant in his model. A spiteful Nemesis seems to pursue persons who set themselves to save trouble by picking up their special knowledge at second hand; and drives them to persistently take things by the wrong end, like people who undertake to ornament their conversation with quotations from a language they do not understand. So we constantly see draughtsmen who ignorantly spot their drawings with tricks of handling that they have caught from cleverer workmen without comprehending the effects for which they were contrived, and use like Mrs. Malaprop's epitaphs. A familiar instance of this is a trick of which we have lately seen too many examples among pen-and-ink draughtsmen, — of thrusting in here and there, now into the light and now into shadow, a stout bundle of diagonal lines which mean absolutely nothing, and only break up the light or shade with a harsh and disagreeable spot. It is evidently a survival of the traditional way of indicating the slanting fall of light in an illuminated interior, or of some adventurous draughtsman's effect of sunlight breaking through clouds. One need not spend much time in turning over our own pages to come upon instances of similar faults. When the student has drawn an object carefully from nature, he will be in some condition to recognize the quality of another's representation of it, and to learn what may be learned from studying that representation. He will also be able to distinguish mere tricks of manner from significant indications of form and effect, and will be set on his guard against charlatanry, so that he may share the profits and shun the dangers of copying.

When in our last paper we advised the draughtsman to study variety of subject, we reminded him that variety of treatment was to be desired. It might surprise many draughtsmen to have to take account of their stock in trade, and find with how few methods of handling they are provided; how few kinds and combinations of lines, for instance, if they are pen-draughtsmen, they have at command. A new object to draw, or an unusual texture to express, finds them without any means to meet the difficulty. If the tricks of line by which they are used to indicate a brick wall or a stone wall or a slated roof will not serve, or if they have to change the pen for the brush, they are helpless. To acquire the necessary resources they must go out of their rut, must make studies of many things, and complement them by the study of different masters. In fact, it will be found that not only diversity of subject, but diversity of expression, requires diversity in rendering. A brilliant design calls for vivacious handling; a simple and quiet one, a correspondingly quiet treatment. A Gothic and a classic design may be suited best by quite different styles of rendering. We have before noted the fact that pen-drawing was preferred where Gothic design was in the ascendant, and the brush by designers of classic tendency. The brilliancy of the one mode of drawing and the breadth of the other find their corresponding qualities in the two kinds of design. And so with geometrical elevations or perspectives. The first are more formal, and invite a more conventional treatment; the second lead by an inevitable association to greater freedom and naturalism. To see an elevation handled with the free handling and the naturalistic accessories that would become a perspective, is always distasteful; and to import into a perspective the rigidity of line that belongs to an elevation, is almost as much so. The mediæval figure that we see standing with his measuring-rod in M. Viollet-Le-Duc's daintily conventionalized sections and elevations looks in keeping with his *entourage;* but thrust him into the perspective of a modern English design, and the most pronounced mediævalism in the architecture does not make him look at home. The styles of drawing which are characteristic of the French and English architectural schools may be taken, indeed, to represent two very different, almost opposite manners, — the one rigorously conventional, the other free and naturalistic; the one developed in a period of classical training, the other of mediæval. The student should make it a point to study, if possible, models of both; for he will find most valuable instruction in each. Of this, and of the use of special examples, we shall speak more at length in our next paper.

STUDIES OF INTERIOR DECORATION.

II.

THIS is the plan of a small parlor in a town house, which has lately been made the subject of decorative treatment.



The bay-window faces the north, and the height of the room is eleven and a half feet. When presented for study, this room had never been occupied; its walls and ceiling were of bare plaster; the base-moulding, architraves, and doors were of white painted pine. It had a large white marble chimney-piece, a stucco-moulded cornice too heavy for the room, and a small moulding in the ceiling dividing it into border and a central panel, with a cast centre-piece.

The room is with reasonable economy to be completed for use as a parlor for the lady of the house and her guests. It is to be fitted to receive a small collection of books and paintings, certain articles of upholstery covered with a rich gray-green figured plush, and a large Persian rug. It is desired that the new furniture to be provided for the room shall be of some light wood. As for the house itself, whatever of architectural character it may have as a whole is due to the inspiration of the Renaissance, but the style is treated without any especial aim at purity.

These are the conditions of the problem. It has been selected for our first study because it is of such a character as to give occasion for the introduction and discussion of several principles of universal application.

In the beginning it is evident, if the matter is worthy of any consideration by intelligent beings, that we must look for *a reasonable starting-point*, and develop our scheme from that point in a reasonable way, conforming always to the essential conditions as originally presented. We must do nothing from mere caprice; we must distrust all the allurements of fashion as well as our own instinctive tendencies for this or that form, style, or color, until they shall have been found exactly applicable to the case in hand. We must begin with self-denial, and endeavor to discover in the subject itself its own capacities for expression.

First, as to the walls. They cannot be very far from the eye at any point of observation; they confront one at every turn, and there is an unusual amount of unoccupied space in them. These therefore, their treatment and furniture, are the first points to be considered. If the room were larger, the ceiling would compete for predominance; if it were smaller, the necessary doors and windows would crowd upon the scene, and absorb our attention. Now it is evident that these walls must by brightness and glow be made to compensate for the absence of sunlight; and, as the apartment is one of luxury, they must be full of elegant detail of shape and color. But as the room is to be fitted for furniture in some light-colored wood, and to be decorated with a few paintings in gold frames, vases, plates of faience, objects of bright metal, these must be provided with a neutral background; our walls therefore, without losing the characteristics above noted, should be so treated as not to come in competition with the objects which are to be placed against them. This implies a certain gravity and reserve, an absence of self-assertion. But the general effect aimed at is not one of repose but of animation, with a harmony made up of many elements.

These conditions cannot be met by any uniform treatment of the whole surface. They are in themselves contradictory, and imply

such a division of the walls as will enable us to place in one all the necessary elements of brightness, gayety, and movement, in the other all those which are grave, neutral, and retiring. This is the key to the perfect adaptation of these walls to the uses of the room. It is the logical starting-point of our study of decoration.

Inasmuch as we must at present necessarily exclude from consideration subject or ornamental hand painting on the ground of expense, though by this means all the conditions of design would of course be fulfilled more exactly and with the greater artistic feeling, we must needs have recourse to such choice as we can exercise among wall-papers. The fertility of modern designers and the restless enterprise of the trade have given us happily in this respect the largest scope, covering not only considerations of outline and color, but certain distinctions of surface obtained by glazes, embossing, or sizings charged with felt. But the very largeness of the scope, and the natural tendency in the production of wall-papers to develop into certain "styles" or fashions, are very grave elements of danger. Undisciplined taste selects a design pleasing in itself, but fatal when applied to the walls, or availing itself of the usual resource of timid but refined people, meets the emergency with pale and expressionless tones which neither shock nor please; and the precious opportunity for the creation of a beautiful result goes by unrecognized and unused. On the other hand, the disciplined taste, having in view the necessity of obtaining a certain definite effect, rarely finds even in the largest and best-selected stock of wall-papers the exact combination of forms and colors by which this effect is to be most directly realized, but is obliged to reach it indirectly by a judicious compromise with the nearest available choice, compensating for its defects or shortcomings by contrasts of other papers, with which he makes up with more or less success a composition of style and panel, or screen and frieze, in such relative quantities as his subject will admit. This limitation of choice not unfrequently gives occasion to a certain hardihood of combination which goes far towards compensating for the loss of the absolute ideal.

In the case in point we have discovered that two expressions are required on the walls, — the one brilliant, the other sober, — and that for these there must be provided two separate divisions. It is evident that as the latter element is to furnish a background, it should occupy the greater part of the wall-space continuously, and form a screen around the room. The line of division therefore, as the height of the room is sufficient to admit it, must be horizontal. The belt which has the brightness and movement essential to the effect of elegance and animation must be above the neutral screen, and serve as a frieze under the cornice. The natural position of the dividing line is given by the height of the doorway. To meet the conditions the screen should present a general warm, neutral effect, the pattern being equally distributed over the space, enriching it but not crying out for attention. Cold tints in quantities should be avoided, as the room needs warmth. To form the necessary contrast with the frieze there should be no movement, no dancing or twining of lines or figures on this surface, but a formal diaper, or a regular recurrence of conventional figures, spaced at intervals not exceeding six or eight inches. Light browns may prevail with serious contrasts of brown-reds or neutral buffs, the figures having dark brown outlines, and no gold. For it is to be observed that a rich neutral effect is best obtained, in art as in nature, by a judicious combination or bloom of many low-toned colors, rather than by any one tint, however soft and warm in itself, or by any combination of two such tints. To rescue the room from an effect of sobriety which would be incompatible with its uses, the frieze needs to be occupied with a bright movement of figures upon a field of warm buff and gold. The line of division between these two features should be enforced with a broad and flat wood moulding, light, like the proposed new furniture, but with dead black edges and a heavy gold picture-rod under. We have ventured in Plate I. figs. 1 and 2, to indicate certain combinations consistent with the requirements here set forth.

With these effects in our mind, we turn over the available stock of paper-hangings, and discover that the nearest approach to our neutral background is in a paper having branches and leaves of a dark olive tint upon a background of light olive, interspersed with clusters of flowers in the low-toned golden-browns and brown-reds which we sought for. For the frieze we find a design in which there is a succession of brown vases or *tazzas*, about thirty inches apart, holding plants with rugged brown branches flowering in bright yellow, with buds and leaves of positive green, the whole having black outlines, and interlacing over a field of buff and gold: an excellent composition, sufficiently rich and full of gayety.

But these, when put together, do not realize the ideal which we have developed from the subject. The screen has too much movement of figures. In this respect it competes unhappily with the frieze, and suggests the propriety of a contrast in the latter by dividing it into a series of square panels with a separate subject in each. The requisite designs not being found in stock for this purpose, we endeavor to effect the same object by establishing on the lower part of our wall surface several firm, strongly marked horizontal lines of color. Again, our new screen has a general tone of cool olive which does not give the expression of hospitable warmth which our conditions require, although it has scattered over it certain low-toned brown-red clusters of flowers. The floor is to be covered with a rich red Persian rug. We may reconcile these two reds and "marry" the wall to the floor by occupying this new dado space with a dark red figured flock paper having a texture and tone similar to the carpet. Above this a narrow belt of *bright red*, with its dividing black-bordered wood mouldings and bead of gold, compensates for the coolness and neutralizes the movement of the screen-surface, and gives a certain boldness and character to the wall treatment. Plate I., fig. 3, explains the treatment thus adopted, giving, so far as black and white can do it, the relative values of the tones and movements in these three divisions. At the top there is lightness, gayety, and movement; at the bottom there is weight, warmth, and strength of color; between them is the broad, quiet neutral space, in itself incomplete until two or three gold-framed pictures and sconces, a few plates of enamelled pottery perhaps, and the light wood which is to form the wall furniture, shall have been set against it. Each spot of accidental or local color in the furniture, books, and other movable fittings will fall naturally into place and give the desired result of quiet elegance.

The constructional woodwork of the room is made as little obtrusive as possible by treating it with the low-toned colors of the screen surface, using the brown-red in the panels.

Thus in developing a consistent method of decorating these walls, it is to be noted, first, that we have established an ideal treatment, and second, that, on account of certain compromises we have been obliged to admit, there has resulted a treatment which in detail is very different from our ideal. But in spirit, in sentiment, the two treatments are identical. Indeed, any given effect or ideal of decoration may be expressed with an infinite variation of design. Therefore the main point is to fix upon the ideal effect, not by caprice or in subservience to a fashion, but by processes of reasoning, and then with such means or with such "study of imagination" as we have at command, to give loyal expression to it.

This is the way in which we have endeavored to meet the condition of the problem as to the walls; we shall presently treat of the ceiling and furniture. H. V. B.

THE ILLUSTRATIONS.

COMPETITIVE DESIGNS FOR THE TOWN LIBRARY, WOBURN, MASS. MESSRS. CUMMINGS AND SEARS, ARCHITECTS.

(9 Pemberton Square, Boston, Mass.)

COUNTRY HOUSE, WELLESLEY, MASS. MR. JOHN A. FOX, ARCHITECT.

(12 Post-Office Square, Boston, Mass.)

This house was completed during the past year. Although planned for summer occupancy chiefly, it is built in the most thorough manner. Most of the inside finish is in ash. There are soapstone fireplaces for open wood fires, with marble mantels, in nine rooms. The attic is finished into rooms, and is nearly the same in plan as the second floor. The roof is covered with purple Welsh slates, and the gable with red Vermont. The outside work is painted in buff, white, and gray tints, the blinds being a very dark green. The house stands on a knoll, in a horse-shoe bend of the Charles River, in the midst of a group of five fine old elm-trees. The two largest trees are omitted in the drawing in order to show the building.

STUDIES OF INTERIOR DECORATION. MR. HENRY VAN BRUNT.

(2 Pemberton Square, Boston, Mass.)

See preceding article.

RELATIONS AND POINTS OF CONTACT BETWEEN THE ARTS.

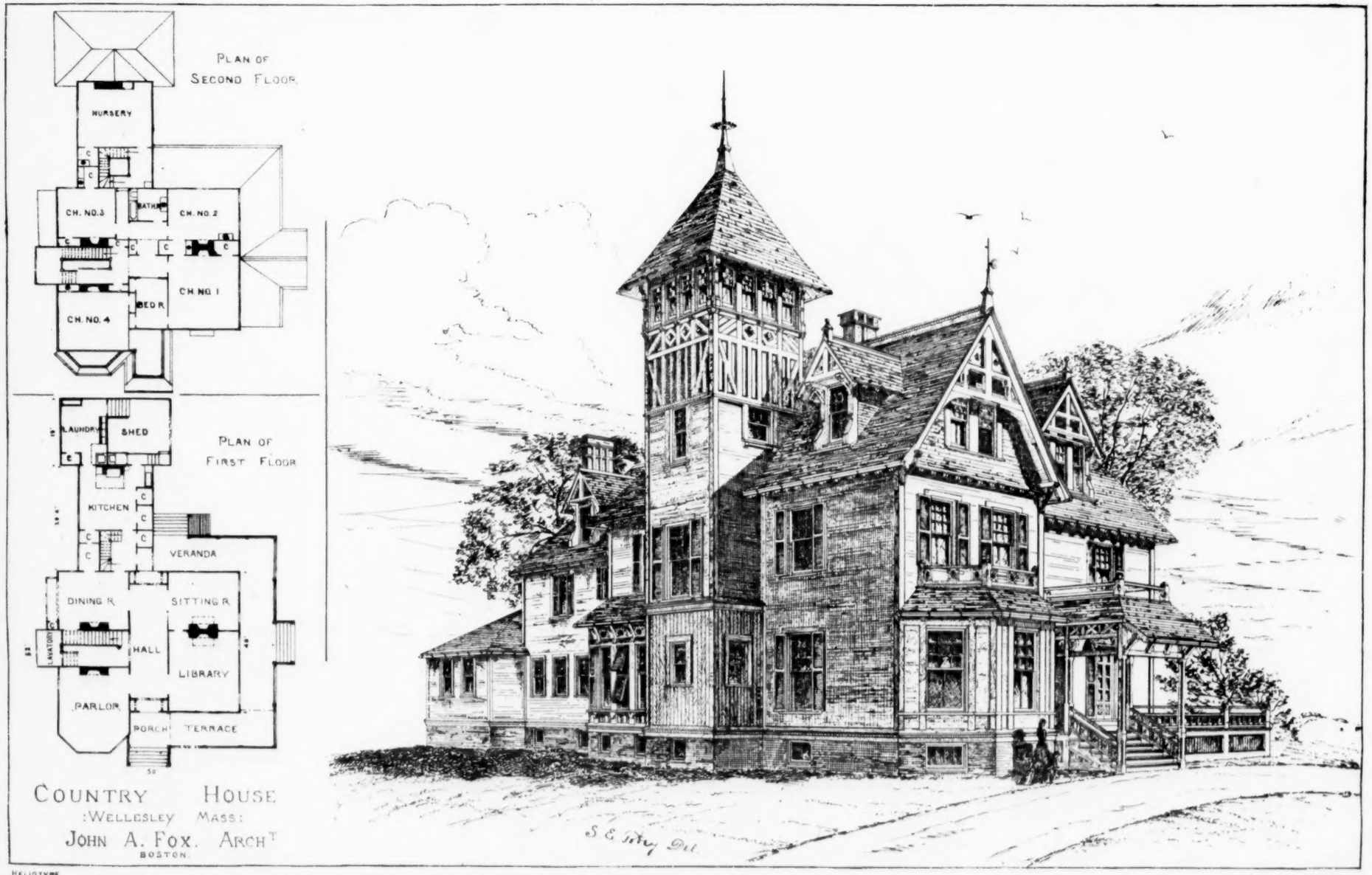
A PAPER BY PROF. WEIR OF YALE COLLEGE

READ BEFORE THE NEW YORK CHAPTER A. I. A. FEB. 22, 1877.

While I am sensible of the honor you have conferred upon me by inviting me to address your Chapter of architects on this occasion, I trust I have the good sense to discern that this is a mere act of courtesy; for it could hardly be expected that I should appear before this professional body either as a teacher or a critic of art. It is simply as a student of a kindred art, that I venture to respond to this invitation by offering some suggestions that may be of mutual interest, respecting the relations and points of contact between the arts.

Some years since, in Venice, I was standing with a sculptor of distinction before a large picture by Paul Veronese. The background of this picture was occupied with stately architectural forms interspersed with statues. To these statues I directed the sculptor's attention, with the remark that they were "well designed," — "Yes," he replied, "but evidently by a painter;" and indeed I apprehended his meaning at once, for I saw at a glance

American Architect and Building News. March 10. 1877.



Country House

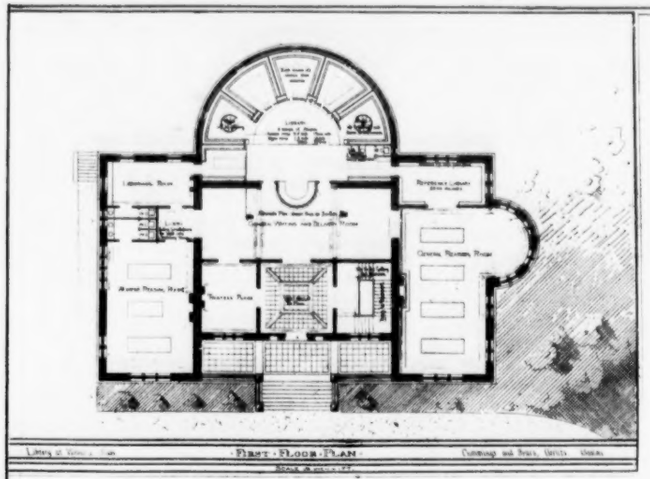
:Wellesley Mass:

John A. Fox. Arch[t]

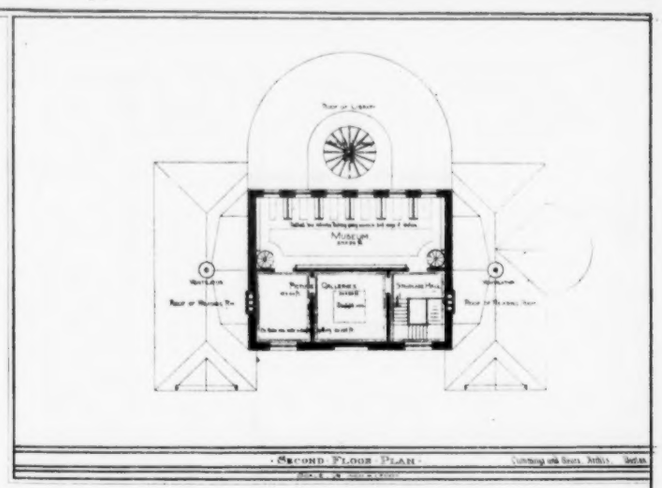
Boston.

Heliotype

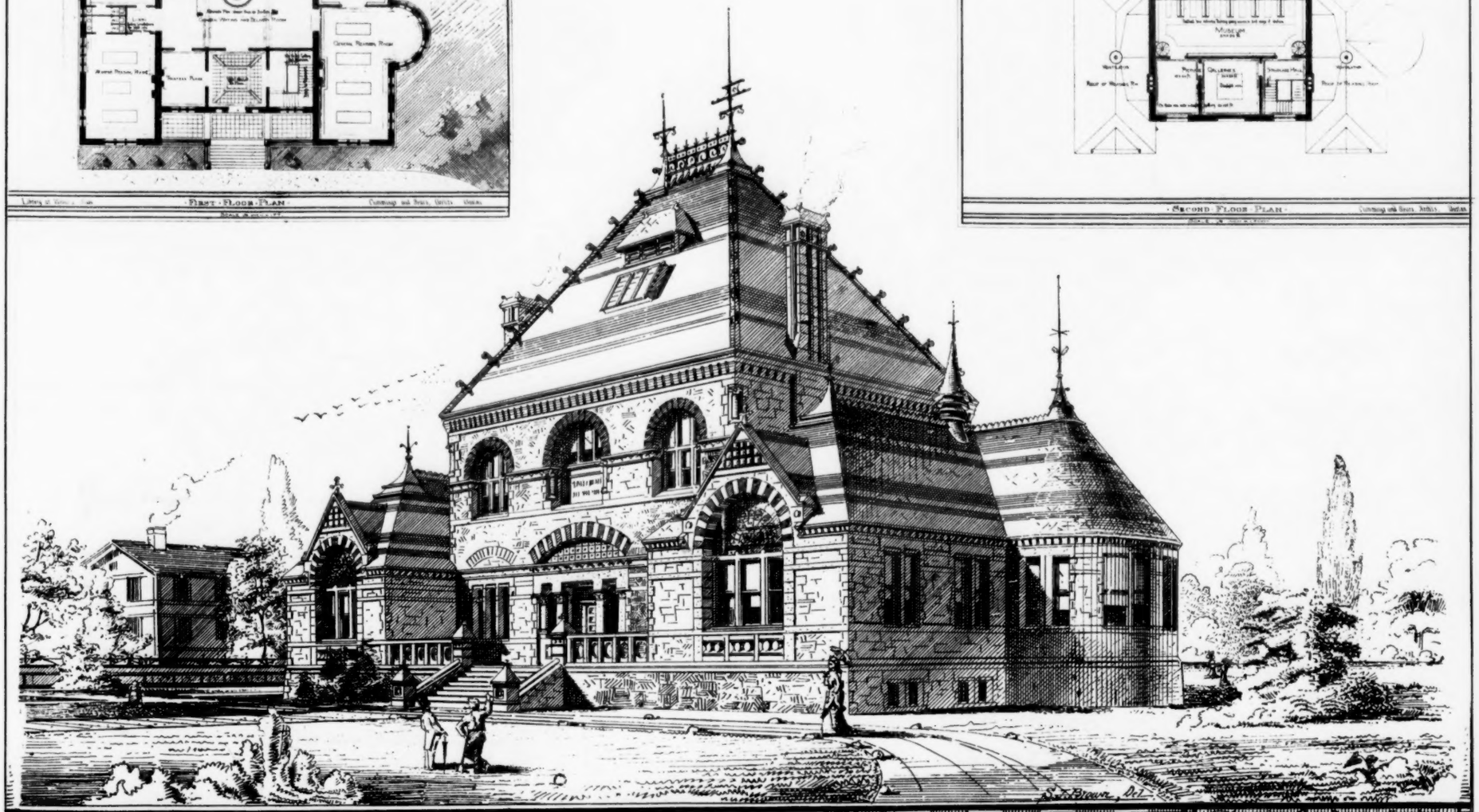
James R. Osgood & Co. Boston



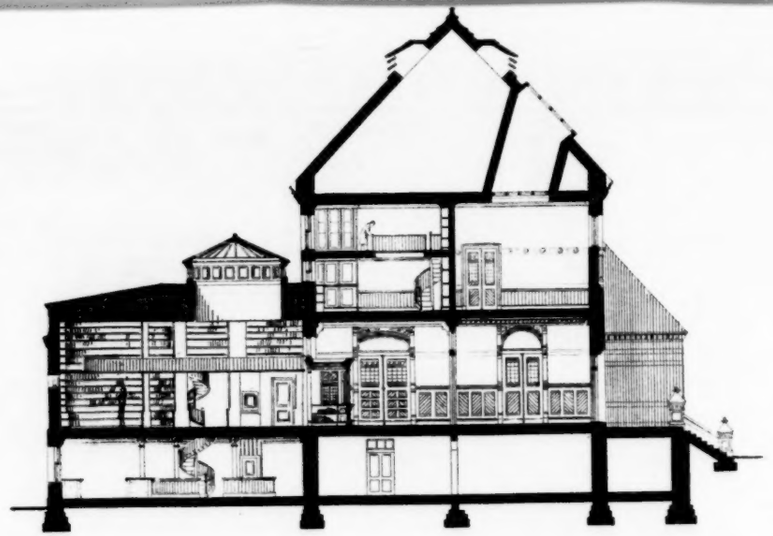
FIRST FLOOR PLAN



SECOND FLOOR PLAN

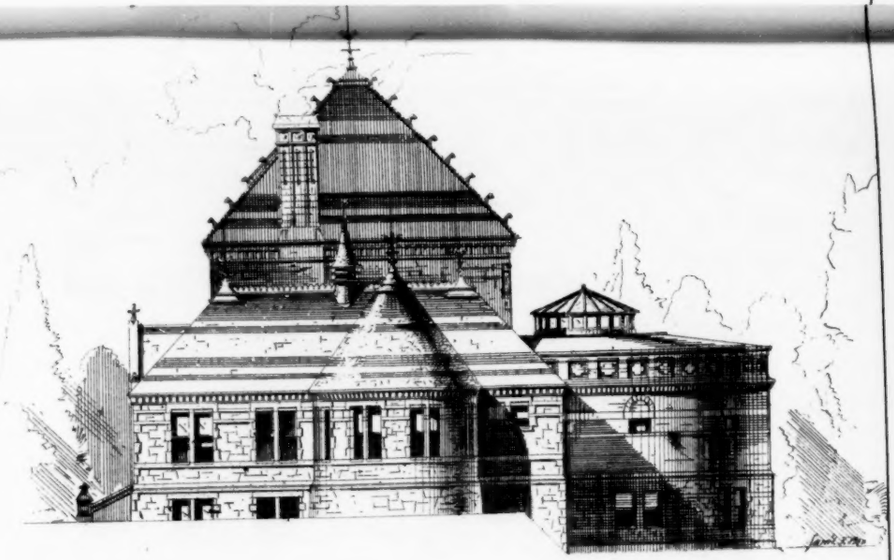


DESIGN for the WOBURN LIBRARY.



TRANSVERSE SECTION

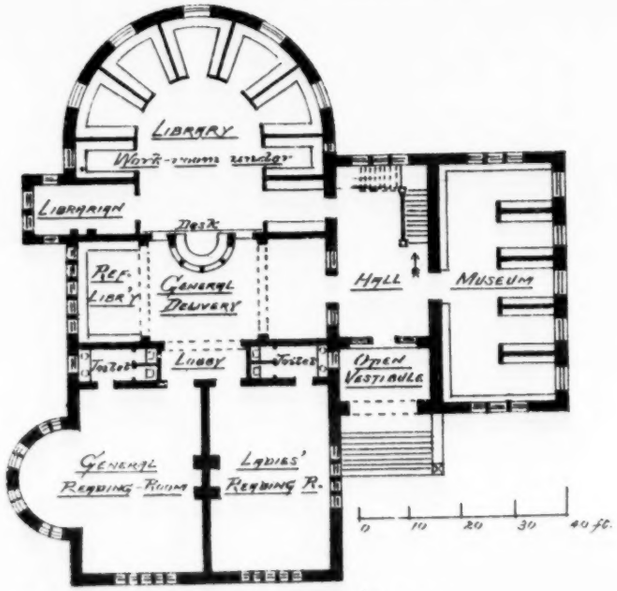
SCALE 1/8 INCH = 1 FT.



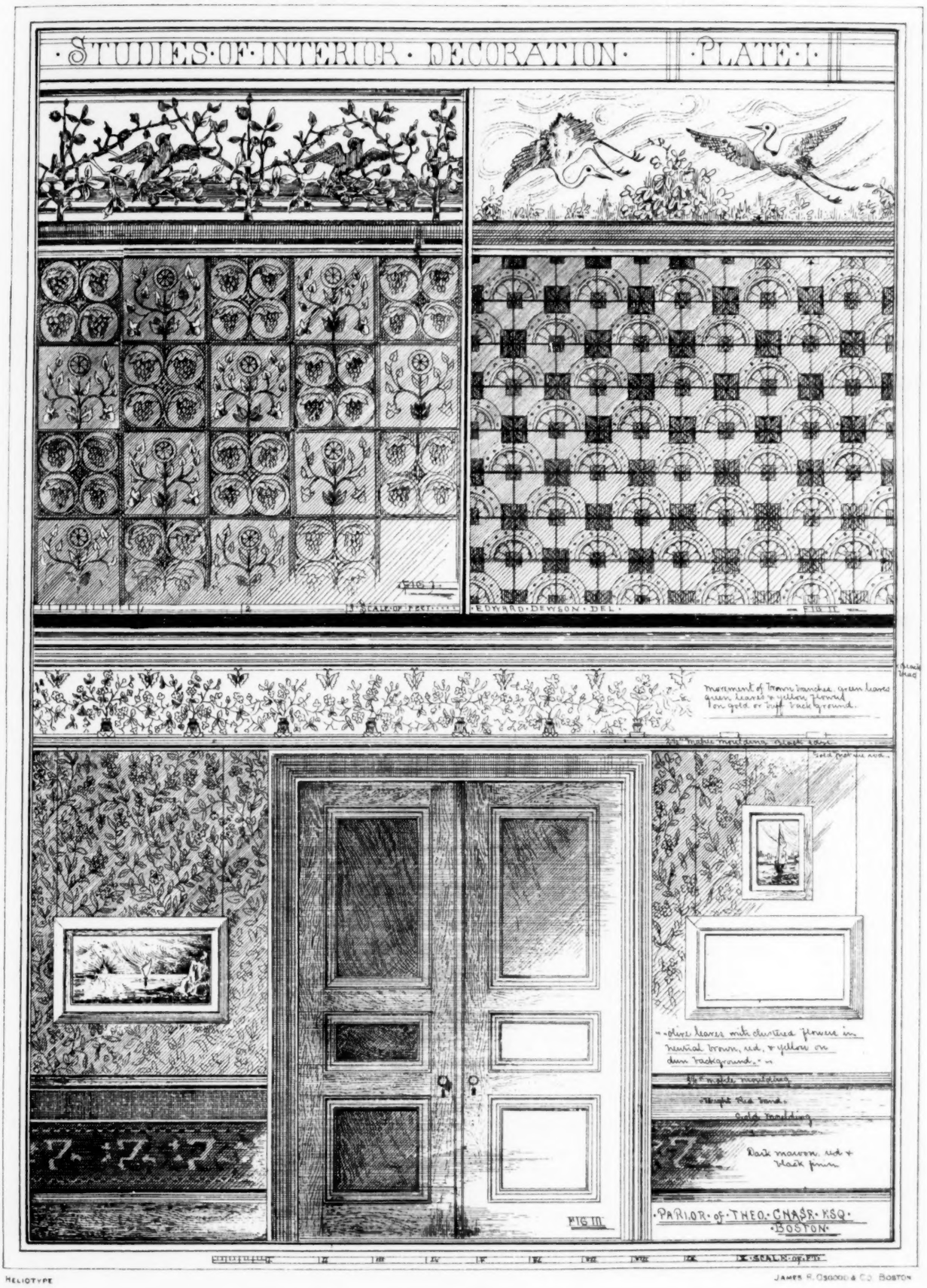
SIDE ELEVATION

SCALE 1/8 INCH = 1 FT.

Cummings & Sears, Archts.



PLAN OF THE ALTERNATIVE DESIGN



HELIOTYPE

JAMES R. OSGOOD & CO. BOSTON

that they were not sculpturesque figures at all, but picturesque. And I dare say, if the architecture which filled the background of that noble picture with such admirable effect were submitted to the critical eye of an architect, he would term it "painter's architecture."

We all agree that the arts have their respective ends in view, and these ends are not only distinct, but this distinction constitutes the distinguishing merit of each separate art. This incident I have cited may suggest that it is natural for us to view all things through the accustomed medium of some specialty from the influence of which we cannot escape.

If, therefore, I should seem to view the themes I am about to discuss, from a picturesque rather than an architectural standpoint, you will understand that this is in accordance with the habit and constitution of my artistic vision.

The outlook upon one art from the domain of another is always an attractive one. We see results in the absence of tedious methods; and these results, in all the arts, have points in common, — something that appeals widely to a universal art instinct, while the absence of labor and process leaves the mind free to the simple enjoyment of the result.

The painter, fresh from the complex methods of his own art, may deem the practice of the sculptor a very simple one. He enjoys too the reality of form in the statue, in lieu of its mere resemblance in the picture; for one may walk round it, touch it; there is no eluding subtility of color, no evanescence of light or shade, to be sought and evolved. The sculptor viewing the finished picture might as readily deem the painter's practice far lighter than his own. And these artists looking upon the completed work of the architect might in a similar strain fancy its elements of design, construction, and the nature of the materials employed, to be far less complex as a means of art than those human elements of form, action, and expression, to which their own arts are so strictly subservient. The architect perhaps will not escape a similar view of disparagement of all other arts in comparison with his own.

But these are superficial estimates which the true artist is not likely to apply. The poet, the sculptor, the architect, the painter, are all properly comprehended in the term artist. Goethe applied this term to himself, deeming his work to be that of an artist. Yet one may be an architect, a sculptor, a painter, and not an artist; as one may be a verse-maker, and a rhymer, though not a poet.

All the arts have points in common; their paths lie through different methods; but they all appeal eventually to those tastes and sympathies that are common to man. The artist labors, not merely for the approval of those within the narrow limits of his own profession, but for that wide and general approval which constitutes fame. Art is not for artists alone, but for man.

The various subdivisions of art — as sculpture, architecture, and painting — seem each to give special emphasis to some one particular æsthetic element above the rest. In sculpture, form predominates; in architecture, proportion; and in painting, *chiaroscuro*. These of course are not ends, but means; but in judging of the purity of an art, we estimate it as the Greeks did, with reference to its reliance upon its appropriate elements for its first expression of beauty. That is, in good sculpture there is no recognized substitute for beauty of form. There are no tricks of art by which the statue can be made to appear beautiful while in form it is not so. And in architecture critically considered, I believe you will agree with me, a badly proportioned structure cannot be decorated into a fine work of art, nor can a picture that is deficient in its *chiaroscuro* be rightly considered admirable as a painting, and when one art lays hold of another to increase its effect, it runs the risk of either compromising its boundaries, or suggesting its own shortcomings; especially will this be the case when the aid it thus receives usurps the first place. We all agree that the art must not be sacrificed to its accessories. It is therefore unreasonable to conceive that any art should discover its prime element in a mere matter of detail, as Mr. Ruskin has insisted that architecture is only properly to be considered a *fine* art with respect to ornament. Professional architects, I believe, ridicule this notion, just as painters ridicule his notion that the mere elaborate imitation of nature constitutes art. But it is through these parallel and diverging interests in the arts that we are sometimes enabled to arrive at general principles. There are points where they all blend in satisfying and pleasing the senses, without one questioning the nature of the means through which their effects are produced. I have known more than one painter pause to admire the spire of Dr. Pott's church (or what was formerly so called), for though simple and unpretentious, it satisfies a painter's eye: it is harmonious and picturesque.

The first two points I would discuss are these: Does the profession of art in any of its branches, gain or lose through modern specialism? And does not this specialism tend to suppress the artistic aim, and exalt to the first place technical methods? Every one is familiar with this broad distinction between artists of the middle ages and those of modern times, viz., that the former were adepts in many arts, while the latter strictly adhere to some one art, or rather to some particular branch of some one art. This is notoriously the case in painting.

It seems to me that this specialism is not only narrowing in an artistic way, but it cramps and confines the sources of invention. Nor does it appear that technical methods in painting, or the science of construction in architecture, gain any respect from this exclusive adherence to a specialty. The old masters in painting, with all their diversity of aims, understood methods more thoroughly than we do to-day; and the architects of Greece and the middle ages understood construction with a scientific insight that has not since been approached. It is undoubtedly true that many examples may be cited of very faulty construction in mediæval architecture, though these instances are the exceptions, not the rule. But what is more, the mediæval builders understood construction so familiarly that they seemingly threw their work together with a certain nonchalance or apparent disdain, as though consciously superior to it by readiness of resource and invention. They were no less mighty in their gambols than in their labors. They treated their materials and their masses in subordination to artistic or expressive effects.

But there is another merit to this mediæval diversity which is lost to modern specialism; it compelled a thorough groundwork of general principles common to all the arts. This enabled the old masters to pass freely from the practice of one art to that of another, as Giotto, Brunelleschi, and Michael Angelo did. At the root of these common principles lay the discipline afforded by the study of the human form. This discipline may appear to be a remote one for the architect. Yet as a discipline, as a means of awakening a sense of form, of proportion, and of those values arising from the relation of the parts to the whole, or of their proper subordination to the latter, it afforded the best education for those æsthetic faculties which properly constitute the artist; for there is no other object that unites in so high a degree of beauty the requisite elements for disciplining the art faculty. Vitruvius, Brunelleschi, and Michael Angelo all insisted on the study of the human form, particularly of its anatomy, as part of the necessary discipline of the architect. And I think I may safely affirm that for the most part the greatest examples of architecture that were produced from the thirteenth to the sixteenth centuries inclusive, in Italy and France, were the work of architects who had studied the human form as painters or sculptors.

Every well-trained painter formerly began his discipline by the study of sculpture, and every well-trained sculptor by at least acquiring the element of drawing; and if we are to accept the testimony of many of the most famous masters of the later middle age, every well-trained architect by acquiring a knowledge of both painting and sculpture was the better fitted for the practice of his art. You may remember the richly ornamented entrances to the cathedral of Siena, flanked on either hand with clustered shafts sculptured with varied traceries. A closer examination of these traceries and running arabesques continued up the shafts and following the jambs shows a ceaseless and occasionally very eccentric variation in design, as though the artist allowed his fancy to free itself whenever his task grew dull, and this without reference to those over-nice symmetries that easily become monotonous, as when invention subsides into mere reiterations. Such variations in ornament have for us the pleasing surprises that a change of key in music affords. When we think we have seen all, we find unexpectedly that we have seen but the smallest part. When we discover this individuality, this freedom, this humanity that even a slight ornament may be made capable of expressing, as at Siena, we easily admire such art.

Much of the interest and charm of Gothic architecture is certainly derived from the character and beauty of its associative sculptures. It follows therefore that the old architects must have been, in feeling, sculptors as well. And shall we not say the same thing of their evident sympathy with the picturesque? It is, I fancy, in some respects a test of good architecture, that it invites the other arts to do it homage; that the poet and the painter, after the fashion of their arts, delight in its beauty, for to the former its stones have voices, to the latter a dumb but expressive charm.

It is not alone in such oriental richness of color as may be seen at San Marco and Venice, that the old architect proved himself to be in sentiment a painter also, but those vast and solemn depths of shadow that lie ingulfed in the great interior spaces of the Gothic cathedrals, and that contending struggle of the irruptive light, — pouring through the lofty windows in triumphal splendor, or the dim, feeble ray now resting with stained hue upon a foliated capital, or dying away in gloom, — suggest a more than common feeling for the highest value of *chiaroscuro*.

As architecture therefore is an art which in its highest demands unites with it whatever the other arts are capable of contributing, it seems to me that the architect cannot escape the necessity of some personal knowledge of the spirit and substance of these arts. It barely meets the question to reply that the architect may call in the assistance of the sculptor where it is needed, or, when he has constructed an edifice, he may call in the painter to decorate it. It is a question that concerns the construction of the edifice itself, in its ornamental details, and in the selection and application of color in the materials employed.

Leaving these imperfect suggestions, there is the second topic to be briefly touched upon, — whether excessive specialism does not tend to exalt the technical above the artistic or expressive in art.

I think it does, for it pushes to excess competition in mere tech-

nical skill; not but that there is great merit in this, but is it not likely to absorb the attention, and all the energies as well, and so divert them from the higher ends of art? There is apt to be more skill but less feeling; more technical display, but less expression, of things that cry out to be expressed. We laymen can recall little of that skill in construction, which the architect very properly delights to dwell upon, in our memories of Chartres, Rouen, Amiens, and Cologne cathedrals, or of the domes of Florence and Rome; but we do recall and fondly dwell upon those lasting impressions that overawed the mind. And surely it is not of the truth of its anatomy we think when the sculptured form of "Laocoön" is present in the memory; nor do we recall the means and implements of his art when the eyes of Titian's "La Bella Donna" speak to us so eloquently from the canvas. No! the true power of art does not lie in technical methods. It is better to emulate the pride and aspiration of the people of Beauvais (was it?) who built their cathedral spire so high that it tumbled down, than not to aspire at all.

A too exclusive adherence to a specialty deprives the æsthetic sense of the benefits that occasional excursions in other fields afford. So far as invention is concerned, an old well-worked vein in art can only produce reassemblages of old forms, that mimic something which is inimitable.

It is the power of putting one's individuality into a thing that gives it life and interest. This was the power that lay at the root of those great works we admire so freely in all the arts.

It is related of Brunelleschi that when arguing before the syndics of Florence, in favor of his plan for crowning the cathedral with its vast cupola, he was denounced as a madman, and the syndics treated his proposals as extravagant and absurd; whereupon the architect boldly denounced the ignorance that was placed in competition with his own long and patient preparation for the task — a preparation of more than twenty years of unremitting study of art, and more particularly of the plan he was advocating, and which he had perfected upon the basis of a most careful study of all the arches of antiquity, and of all the methods of building, clamping, vaulting, and so on — to that degree of thoroughness that he exclaimed, "I, who in my own mind see the cupola raised, have reflected on all these things;" and the visitor at Florence looking upon that great dome, — the greatest in the world, I believe, — may recall those words of George Eliot in "Romola," that it had once been only a daring *thought* in the mind of a small quick-eyed man, the son of a notary.

I dare say the reflection has already been anticipated in your minds, that these considerations are all very far removed from the immediate and practical ends that are attainable in art to-day. They may or they may not be so remote. But if they be, I should only the more desire to confine myself to them. What is termed "the practical" will take care of itself very well; for it has an advocate in every brick, and from the hod-carrier up to the master-builder, its arguments are fortified by the strongest facts which none may gainsay. But Mr. Emerson has well remarked, "When first wants are satisfied, then the higher wants become imperative."

The architect, no less than the painter or the sculptor, secures a friend or a persistent enemy in the observer whose eye is filled, in passing, with the image of his art. For the sensibility fortified by knowledge is after all the final and universal test in such matters; and while an acquaintance with its *technique* greatly enhances the appreciation of a work of art, it is by no means the first essential requisite to this end.

Instances are not wanting where the architect with adequate ability for better things has been reduced to merely lending his skill in the mere elements of his art, to embody the absurdities of an altogether inadequate conception on the part of his client.

The impression likewise has been sometimes entertained on the part of the ignorant, that if the architect were allowed more liberty, he might lose his moral sense of responsibility with respect to space, time, and money; but it may be safely affirmed that as all true art has its own strict economies, and the most beautiful thing is also the best adapted to the place and function it serves, there is true economy in the employment of a good architect, and in allowing him to exercise his own invention, which should properly be held superior to any one's else.

There is but one suggestion I would add before closing my remarks, and this is with respect to what professional practitioners might do for art, as is done in every other profession, if they would themselves instruct the public upon those subjects to which they have given both study and reflection united with practice, instead of leaving the every-day criticism of art to pseudo-critics and mere writers, to whom we are indebted for that mild *pabulum* which not merely has no substance whatever, but rather nourishes to the decay and death of all genuine sympathy for art, and blights so far as it is able the enthusiasm of those who should be stimulated and encouraged to the highest effort. A keen and serviceable criticism in art is altogether lacking in this country, while artists themselves neglect the learning of their art, and subside within the exclusive limits of its practice. Do they not run some risk of elevating the technical above the intellectual, and so of becoming skilled artisans rather than true artists? A singular prejudice seems to have existed in the mind of some people, artists as well, that learning in art is prejudicial to its practice, or that it is not the province of an artist to talk about his art. Even Sir Joshua Reynolds falls into this error in theory, for he says a painter should sew up his mouth, meaning that he should rely solely upon his art as the legitimate means for expressing his ideas. But the worthy Sir Joshua appears to have overlooked the fact that his own famous discourses were a conspicuous refutation of this narrow charge.

One cannot put too high an estimate upon the power of architecture to impress human sensibility and inspire profound thought. If any one doubts this, let him make a pilgrimage to its shrines. It is an art which in its most exalted forms gathers within its vast limits all other arts, which are made tributary to its sublime and solemn ends.

In enumerating the necessary qualifications both of an artistic and scientific kind demanded by an art so complex and yet so practical as architecture, one is likely to exclaim as did Rasselas on learning what were the necessary qualifications of a poet. "Enough," he says, "for you have convinced me that no man can be a poet." And when we reflect upon the variety of knowledge that is requisite for the thorough practice of this art, we may well repeat the phrase slightly altered, that no man can be an architect. And indeed, turning the eye upon many of those marvellous structures that were erected in ancient and mediæval times, — structures which elicit unspeakable admiration, and yet to which the name of no architect is attached, so uncertain is fame, — we are about led to imagine that they must have grown up stone by stone, the petrified aspiration of a time or people, and not the creation of an individual mind.

[We regret that want of space has obliged us to slightly condense Prof. Weir's paper. — Ed. American Architect.]

BOOK NOTICES.

ELEMENTARY ARCHITECTURE.[1]

It cannot be said that the text with which Mr. Krusi has prefaced his own numbers of his elementary drawing-books adds any charm to them; yet it might have been better if Prof. Babcock had prefixed fuller directions to those (the architectural series) which he has prepared. They might be the means of conveying considerable information to the uninstructed student; but the descriptions are very slight, and give little account of the way of making the drawings or of their characteristics. As they stand they are merely examples to be copied with measuring-strip and dividers, although the scales are recorded in the text. Nevertheless the student will be likely to get as much instruction in drawing them as he would get from the same sort of work in offices, with the advantage of having a better selection of forms before him than he would be likely to find in an average office.

The examples given in the numbers which we have received comprise a variety of scale-drawings of architectural and structural detail, — two or three orders, vaults, Gothic features and mouldings, and a set of working plans for a frame house of a common type. The selection grows more interesting with successive numbers. It would be an advantage if the student were informed where the examples were taken from, — the Gothic windows in No. IX. for instance, — and if a note were given here and there to call attention to any significant peculiarity. We do not believe in introducing such a roof-truss as is given in plate 5 of Part IX.; satisfactory in idea, but constructed on a system that is fortunately become obsolete, among American constructors at least. If executed in any of the ordinary materials and put together as here shown, it would soon sag enough through compression of the heads of the king and queen posts by the thrust of the rafters to throw the rather complicated system of braces out of their bearings.

ARCHITECTURAL SURVEYORS' HANDBOOK.[2]

As in this country we do not have such persons as clerks of works, architectural surveyors, and quantity surveyors, the necessary data for compiling a book precisely similar to Hurst's Architectural Surveyors' Handbook, could not be arrived at. Nevertheless that portion of the Handbook which constitutes its distinguishing feature — the measurement of builders' work — is of value, in spite of the drawback of its being based on English uses, and employing English trade terms.

The tenth edition of this compact little work is now put forth, revised and enlarged. Besides the usual formulæ and tables of strains, strength, weight, etc., a great deal of useful information is given on water-supply, pumps, drains, gas-supply, walls, arches, and piers, on heating, ventilation, mensuration, etc.; and among other things a very curious table of the constants of labor, wherein is set down the fraction of a day consumed by craftsmen and laborers in performing almost all varieties of work, — for example, in picking up and stacking a thousand bricks without moving, a bricklayer consumes .2 of a day; while for selecting a thousand bricks for facings, .3 is required.

[1] Krusi's Industrial Drawing: Elementary Architecture. By Charles Babcock. Professor of Architecture in Cornell University. New York: D. Appleton & Co. Parts I.–IX.

[2] A Handbook of Formulæ, Tables, and Memoranda for Architectural Surveyors and Others engaged in Building. By John Thomas Hurst, C.E. Published by E. and F. N. Spon, London and New York.

Not having a copy of an earlier edition by us, we cannot say wherein the present edition differs from its foregoers. Typographically, as well as in arrangement and classification, it is admirable, as in spite of the compactness of the work, the pages present an open and fair appearance, allowing the eye to seize at once the more important things on the page before it. The book is well indexed, cross-references are given, and authorities are cited in a very satisfactory manner; but a table of contents — a thing of importance equal to that of the index — is not given. The value of some of the tables is lessened by their want of correlation, as one set of substances are used in one table, while in the next different substances are used. Together with much information that is curious as well as valuable, there is some that is curious and practically valueless: as example of the first may be cited the fact that a speaking-tube measuring half a mile in length and making numerous bends has been found to work satisfactorily; as example of the latter, the fact that an elephant drinks about twenty-five gallons of water a day.

BOOKS RECEIVED.

A Plea for Art in the House. By W. J. Loftie. Illustrated. Porter & Coates, publishers, Philadelphia. Price $1.00.

Suggestions for House Decoration. By Rhoda and Agnes Garrett. Illustrated. Porter & Coates, publishers, Philadelphia. Price $1.00.

Applications of Physical Forces. By M. Amédée Guillemin. Published by Macmillan & Co., London and New York. Price $12.50.

DRAINAGE OF COUNTRY HOUSES.

NEW YORK.

EDITOR AMERICAN ARCHITECT AND BUILDING NEWS.

Dear Sir, — I was much interested in the courteous responses of Col. Waring and Mr. Towne to my letter on the drainage of country houses, published in your issue of Feb. 3, and regret that I could not find time for an immediate reply.

I cannot wholly agree with Col. Waring's views respecting the absorptive and oxidizing power of the soil, without taking certain well-defined exceptions to his very general conclusions. A full discussion of the points at issue must be more appropriate to the columns of an agricultural journal than to one devoted to architecture; but as architecture and drainage are of necessity closely allied, the subject possesses a practical interest for a very large proportion of your readers.

In my judgment, formed after some observation, the adaptation of the soakage system to house drainage depends upon a variety of conditions, primarily upon the character of the soil. If I attach more importance to the action of vegetation than Col. Waring does, he attaches more importance to the powers of the soil and its contained oxygen than I do. In his communication published in your issue of Jan. 27, he speaks of the "concentrated oxygen of aërated earth." I have never found any satisfactory evidence of the fact that oxygen is concentrated in the soil. Oxidation is unquestionably promoted by looseness of the soil; but this same condition favors the escape of gases resulting from the decomposition of organic matter, and those most productive of disease are not, so far as I know, appropriated by vegetation. In assuming that the character of the soil is of secondary importance as concerns the efficiency of the soakage system, Col. Waring seems to contradict himself. Very little air permeates a stiff clay soil, as he practically admits. Heavy clay soils do not in themselves exert a stronger absorptive action than porous soils. The absorptive powers of clay are only manifest when it is finely divided, as when burned or intimately commingled with the looser components of a light loam.

The experiment of straining dung-liquor through soil does not prove much, if any thing, as regards the subject under consideration. The solid matter is simply removed by the ordinary proces of filtration, and under the combined influence of heat, moisture, and air, it would quickly ferment. That "organic matter once seized upon by the soil is never again given up in an unchanged condition," is not, I think, established. I know of one case where carrots planted in ground fertilized with material freshly removed from an old privy-vault, were wholly unfit for food. Washed clean and cut with a knife, they were unhealthy in appearance and offensive in smell. As to the "unyielding grip of the interior surfaces of the soil to prevent added organic matter from working downward," I fear there is some room for doubt. It is certainly difficult to reconcile the proposition with the fact that the roots of plants follow the deposition of organic matter, and, as in the deepened soil of the Mapes farm in New Jersey, extend to twice the depth usually reached by the roots of such plants in stiff soils, manifestly because the manure had worked down as the depth of the soil was increased.

There is a limit to the absorptive powers of every thing. Even charcoal has its limits, although its powers are to some extent self-renewing. So it is with the soil. When the surface is ice-bound there is little opportunity for aëration. If unfrozen below, it is likely to be sodden from preceding rains, and under such circumstances the destruction of upward matter by oxidation would proceed but slowly.

That sewage can be discharged into the soil continuously, without ultimately polluting it to considerable depths and beyond the reach of the oxidizing influence of the air, I cannot believe. It is no uncommon thing to find deep wells polluted by impurities carried down from the surface. The water of wells sunk near barnyards is often unfit for use, even when the danger of contamination by the inflow of unfiltered surface-water is effectually guarded against. On this point the experiments of Dr. Lissauer, as translated from *Deutsche Vierteljahrsschrift* in the Proceedings of the Institution of Civil Engineers, are not without interest. The results of fifty-one experiments to determine the absorptive power of soils point to the following conclusions, among others: —

"1. The liquid entering the pores of the soil displaces the air or liquid previously present, forcing the former upwards into the atmosphere, and the latter downwards into the subsoil or effluent water.

"2. In order that the effluent water may not be directly polluted by the sewage liquid, the maximum supply of the latter must not be more than can be taken up by the pores of the soil.

"3. Dry loamy soil absorbs more than peaty soil and gives up less, whilst dry sandy soil on the contrary absorbs less and gives up more. Consequently a loamy soil, though it absorbs a large quantity of liquid, can seldom be irrigated; whereas a sandy soil, though it absorb but little, may often be irrigated.

"4. The looser the soil, the easier water-courses are formed in it, and therefore the less can its maximum power of absorption be approached: otherwise the sewage liquid might penetrate the subsoil before the whole of the ground had been saturated.

"5. In order therefore that the effluent water may be protected from pollution, it is especially necessary that the absorptive power of the soil should be known; but the determination is of no value unless it be made in a sample in which the natural position of the particles of earth have been undisturbed."

I have no desire to place myself in a position of antagonism to the system favored and defended by Col. Waring in his several communications. I consider it good, but like all good things it probably has its limitations. It rests with the engineer and the architect to intelligently determine what these are.

In Mr. Towne's letter, I find some statements which indicate that he has reasoned from imperfect data. The consumption of water in cities is certainly no standard by which to judge the consumption per head in country houses depending upon wells and cisterns; and I refer him to Col. Waring's last letter for an estimate, which though very liberal is more nearly correct. As regards cesspool capacity it must, of course, depend somewhat upon circumstances. A nine-hundred-gallon capacity is by no means an arbitrary standard. Speaking generally, it is safe to say that the smaller the cesspool the better, inasmuch as it requires to be emptied the oftener. The conservation of filth under conditions favorable to the exercises of its power for mischief is never desirable. Eternal vigilance is the price of good health; and I have yet to see a drainage system applicable to isolated country houses, which can be left to take care of itself without sooner or later becoming a nuisance and a danger. I should never drain roofs or carry storm-water from any shedding surface into a cesspool which also received the house-waste, and the danger of overflow from this cause need not be taken into account. Respectfully,

J. C. BAYLES.

BOSTON.

TO THE EDITOR OF THE AMERICAN ARCHITECT AND BUILDING NEWS.

I have carefully followed the discussion in regard to house drainage between Messrs. Towne and Waring, and am forced to believe, from their accounts of "careful watching" and "satisfactory results," that their field of labor must have been in a climate far more mild than that of New England. They hint, indeed, at conditions of frozen ground; but the stubborn fact is that in this part of the country the soil is frozen to a depth of three to five feet, and for eight to twelve weeks at a time, except in unusually mild winters. Mr. Waring says that his "house-drain is only two feet deep, and has remained unaffected when the ground was frozen solid nearly five feet deep;" not at all surprising, if his range has a water-back, and his bath-tub is conscientiously exercised. But (and here is the question on which, not having experimented, I desire light) his flush-tank is outside the house, mainly above ground, with only an inch-board "dog-house" covering it. This would certainly allow the sewage to become cooled off in this climate. Now suppose his sub-irrigation pipes one foot below the surface of earth frozen four feet deep receive a flushing of this sewage twice a week for six weeks: first, how can the soil already frozen solid three feet below the pipes receive and absorb the liquid? and second, to how great a degree will it become aërated during the winter when the lawn is covered perhaps continuously with a foot or two of ice and snow?

During the six weeks which is assumed as no unusual duration of this state of things, on the accepted basis of calculation there will have been discharged into the pipes (and where thence?) 12,600 gallons of sewage.

Will not the aëration have to proceed with extraordinary rapidity to make up all this lost time, when the frost finally does leave the ground, and that at a time when the soil is ordinarily sodden with spring rains, and vegetation is still dormant?

Every intelligent person who has to do with house sanitation acknowledges, of course, the prime importance of this matter of sewage disposal on limited areas in the suburban districts; and I propose the following questions, with a view of eliciting further information: —

As this letter is conceived in an interrogative mood, let me ask the advocates of Fludder's system of soil-pipes, how a current of air at a temperature averaging (say) 10° or 15° Fah. constantly descending a soil-pipe at a considerable velocity, would affect the water in connection with or near such pipe. About such an average temperature prevailed (say) from Dec. 1 to Jan. 15, 1877; and a thick iron pipe like a soil-pipe, kept at this temperature, and connected untrapped with the water-closet basins, would, it would seem, cause dangerous freezing, if not by conduction, at least by lowering sufficiently the temperature of the air beneath and around the closet-basin and supply-pipe. Further, with a thick iron pipe cooled down by a constant current of outside air at (say) 10°, would not cold water trickling down its inner surface be liable to congeal?

ZERO.

TRINITY CHURCH.

ROCHESTER, N.Y., Feb. 26, 1877.

EDITOR OF AMERICAN ARCHITECT AND BUILDING NEWS.

Sir, — The beautiful heliotype of the new Trinity Church in Boston which graced your impression of the 3d inst. seems to me to be quite a marked improvement on any thing in the line of building illustration which had preceded it, and so to deserve special notice and commendation. In your critical remarks on the church in the paper of the 17th inst. you call attention to "the grand mass of the tower" which is undoubtedly the most notable feature of the building; and it has occurred to me that it might be a kindness to "architectural students" as well as interesting to general readers to call attention to the fact that this tower is good because evidently studied in "mass" from the tower of the old Cathedral of Salamanca (A.D. 1200). This will strike any one who may happen to have Fergusson or Street handy and will refer to the illustration of that lantern.

A "study" for this same Boston tower was published in the New York Sketch-Book for August, 1874; but the design ultimately carried out is even more like the original than the study.

In nothing else perhaps is our church design so weak and meaningless as in its towers and spires; and this may possibly be owing to a striving after new forms and startling effects, a desire to be original even at the cost of being vulgar. There is a simple dignity and impressiveness about the mediæval forms and proportions which we cannot afford to neglect, and are not likely to improve. Just one regret remains in the mind after a long look at your representation of the new "Trinity," and that is, that the western towers and the proportion of the nave were not as carefully studied as the central tower.

C.

[The advantage of the mediæval builders was, that besides living in an age which had definite artistic aims and a well understood and fixed procedure for attaining them, they, as first comers, had the opportunity of appropriating the simple and natural forms that first suggest themselves for the purposes at which they aimed. They left to us who follow them the choice of using the same forms for the same uses, or taking refuge in others less natural and therefore less suitable and expressive, with the risk of being, as our correspondent says, original at the cost of being vulgar. No architect can afford to neglect the study of his predecessors' works, or of his contemporaries, for that matter. But there is studying and studying; and if a dozen architects were to study a tower from that of Salamanca, we should be interested to know how many of them attained a result on a par with that of the architects of Trinity Church. The Salamanca tower is octagonal, with a round turret relieved against each corner face. The central dormers of the Trinity tower are very like those at Salamanca and many others, but the treatment of the curtain below, which is studied with great skill, is very different. — *Ed. American Architect.*]

HOW MORE THAN FIVE PER CENT MAY BE PAID.

ABOUT January, 1875, a certain church in Boston then intending to build a new edifice invited five architects to compete; a subcommittee from the general committee was appointed to wait upon three of the competing architects, and make with either the best bargain they could. One squarely said his charge would be five per cent on the cost; another named a fixed sum; and the third, who happened to have submitted the most satisfactory design, agreed to make the drawings and partially superintend (or supervise) the work for $1,000. The cost of the church was to be about $60,000.

Later, on account of some internal dissensions, the committee was changed, and another architect employed, and the architect with whom the earlier committee had contracted was dropped, not discharged or settled with. The following is the actual result.

Architect employed, 2½% for general drawings and specifications.	$1,500 00
Same for detail drawings 1%	600 00
Local superintendence by one of the competing architects . .	500 00
Amount awarded by jury to architect dropped	761 24
Cost of court, etc. (said to be)	500 00
	$3,861 24

Members of the committee under oath stated that the building cost a trifle less than $60,000.

T.

NOTES AND CLIPPINGS.

BROOKLYN'S NEW CATHOLIC CATHEDRAL. — Bishop Loughlin of Brooklyn has determined that the long-suspended work on the new Cathedral shall be resumed this spring, and has notified the architect, Mr. William S. Kieley, to make arrangements for the work. The structure, which was commenced about ten years ago, is bounded by Vanderbilt, Greene, Lafayette, and Clermont Avenues. It has been finished to the first floor only. The edifice, which will be one of the finest in the United States, will cost upward of a million of dollars. The progress of the work will have to be regulated by the amount of funds available therefor. There is sufficient money now on hand, it is believed, to continue the mason-work during the spring and summer.

AN IMPROVEMENT IN ELEVATORS. An elevator in a San Francisco hotel has an attachment by which the doors at the different landings are opened and shut at the proper moment: this is effected not as in some cases, by the car pressing against a lever in its rise, but by a separate piece of mechanism independent of the car, which is regulated in the engine-room below.

THE CHICAGO COURT-HOUSE. — Work has begun on the Chicago Court-House two weeks earlier than was expected.

AN ILLUMINATED CROSS. — The cross upon the new St. Augustine's Chapel, on Houston Street, New York, is to be illuminated by night.

SCAMPING. — The town of Westfield, Mass., built four years ago, under the direction of an architect, a schoolhouse for $36,000. The work was so thoroughly scamped throughout that the building is already badly out of repair. As sample of its condition it is said that the stairs are so unsafe that they have to be propped up from the basement.

A SCAFFOLD ACCIDENT. — On the 30th of January a scaffold surrounding a chimney-stack that was building in the city dust-yard, London, was blown over, injuring several "sorters," one of them fatally. It was shown at the inquest on the body of the woman so killed, that the scaffold, which was a square one built of planks and fastened together with bolts and nuts, was one hundred and twenty feet high, while the chimney-stack had been carried to a height of only six feet when the scaffold was blown over. The jury returned a verdict of accidental death, appending a rider that "no scaffold should be erected as high as one hundred and twenty feet without carrying up the shaft with it."

BURIAL-PLACE. — An ancient burial-place was discovered in rebuilding a house at Shelby, Eng., lately, wherein were found 15 or 20 coffins, formed of the trunks of trees split in two and hollowed out. They were closely packed together at a depth of from 5 to 8 feet; and at the head of several an upright oaken post 3 feet high was standing. In 4 out of 7 coffins examined, hazel rods or twigs were found in the right hand of the corpse. In 1857 a similar burial-place was discovered, and in one of the coffins was found the skeleton of a woman, which is now preserved in York. Several oval beads were also found; and in the head of the body was found a small round hole, resembling the perforation in the skull of a Roman woman lately discovered at York.

THE BUILDING OF THE BRITISH WAR-OFFICE. — The whole of the English War-Office Building has been condemned by a committee of inquiry. No change has been made in its drainage system since it was built in 1767, and many clerks have broken down in health there.

A NEW WEEKLY. — With the second month of the year, *La Gazette des Architectes* has become a weekly journal of four or eight quarto pages, with a fortnightly supplement of eight pages which will contain such matter as did not need to be published immediately.

NEW GERMAN ARCHITECTURAL WORK. — The Architectural Union of Berlin has just published a richly illustrated work entitled *Berlin and its Buildings*, which gives the detailed history of architecture in Berlin and the manner of its recent development.

PORT OF CALAIS, FRANCE. — The minister of public works proposes to demolish the existing forts, and in their stead build seven detached forts and a wall of circumvallation around the cities of Calais and St. Pierre, at an estimated cost of some $3,000,000.

THE DANGER OF ILLUMINATED CEILINGS. — Members of the French Chamber of Deputies who sit under the glazed ceiling of the hall were lately alarmed by the sound of sudden snapping over their heads. It was found that the heat of the gas-jets above it had caused many of the panes of glass to crack or "star" in all directions.

EUROPEAN CHURCHES. — We do not know what data have been used in the following computations, so we cannot say how reliable they are; but they are not without interest as comparable approximations. St. Peter's Church at Rome will hold 54,000 persons; Milan Cathedral, 37,000; St. Paul's at Rome, 32,000; St. Paul's at London, 35,600; San Petronio at Bologna, 24,400; Florence Cathedral, 24,300; Antwerp Cathedral, 24,000; St. Sophia's, Constantinople, 23,000; St. John Lateran, 22,900; Notre Dame at Paris, 21,000; Pisa Cathedral, 13,000; St. Stephen's at Vienna, 12,400; St. Dominic's at Bologna, 12,000; St. Peter's at Bologna, 11,400; Cathedral of Vienna, 11,000; St. Mark's at Venice, 7,000; Spurgeon's Tabernacle, 7,000.

EPITAPH. — Does everybody remember the epitaph upon Vanbrugh, architect and dramatist? —

"Lie heavy on him, earth, for he
Laid many a heavy load on thee!"